

Notice of Allowability

Application No.

10/760,375

Examiner

Erica E. Cadugan

Applicant(s)

SHIRAISHI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to election filed 10/2/06.
2. ☒ The allowed claim(s) is/are 1-15.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Jeffrey Schmidt on October ~~27~~, 2006.

The application has been amended as follows:

Claim 1 (Currently Amended). A machine tool comprising:

a support table provided on an upper surface of a bed to support a work;

a Z-axis saddle for reciprocation [toward] in a longitudinal Z-axis direction
[(longitudinally)];

a machining unit mounted on the Z-axis saddle and provided with a machining head for machining of the work;

a compartment cover arranged on the bed to compartment a machining region, in which [a] the work supported on the support table is machined, and a machine region, in which the machining unit is movably arranged;

an opening window provided on the compartment cover to permit the machining head to go in and out of the machining region therethrough; and

a seal member in the form of a closed ring to be mounted on an inner peripheral edge of the opening window of the compartment cover;

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wherein an entire periphery of an outer peripheral surface of the machining head is brought into sliding contact with an inner peripheral edge of the seal member in a state, in which the machining head is moved into the machining region from a tool exchange position within the machine region.

Claim 2 (Currently Amended). A machine tool according to claim 1, wherein the machining unit is configured to permit exchange of plural kinds of machining heads having different body sizes, [an] the opening window is formed in the compartment cover to enable a machining head of a maximum size of the plural kinds of machining heads to go in and out of the opening window, and the opening window of the compartment cover selectively and exchangeably mounts thereto plural kinds of seal frames each comprising a mount frame formed with [the] an opening window conformed to a body size of a corresponding one of each of the machining heads, and the seal member mounted to an inner peripheral edge of a respective one of the opening windows of the mount frames and put into contact with an outer peripheral surface of a body of the respective machining head.

Claim 3 (Currently Amended). A machine tool according to claim 1, wherein the machining unit is configured to permit exchange of plural kinds of machining heads having different body sizes, the seal member is conformed to a maximum body size of the machining heads and is mounted to the opening window [of the mount frame], plural kinds of head covers formed into complementary shapes so as to assume the same shape as the external shape of a body of the machining head having the maximum body size upon mounting on those machining heads having sizes, which are equal to or less in size than the maximum body size, are selectively and exchangeably mounted on the machining unit when the machining heads having

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sizes which are equal to or less in size than the maximum body size are provided to the machining unit, and a seal member is mounted on an inner edge of each [the] head cover to come into contact with the outer peripheral surface of the respective machining head.

Claim 4 (Currently Amended). A machine tool according to claim 1, wherein the machining head is mounted to be able to reciprocate in a lateral X-axis direction [(laterally)] or a vertical Y-axis direction [(vertically)], a shield cover is mounted on the machining unit to shield the machining head and to allow reciprocatory movements of the machining head in the X-axis direction [(laterally)] or the Y-axis direction [(vertically)], and an outer peripheral surface of an annular frame constituting the shield cover is brought into sliding contact with an inner peripheral surface of the seal member on a side of the opening window in a state, in which the machining head is moved into the machining region from a tool exchange position within the machine region.

Claim 5 (Currently Amended). A machine tool according to claim 1, wherein the compartment cover comprises an arch-shaped support frame provided upright in a predetermined position on the bed, and an extensible cover mounted inside the support frame to be able to reciprocate together with the seal member in a lateral X-axis direction [(laterally)] or a vertical Y-axis direction [(vertically)], and wherein interlocking unit is provided between the machining unit and the extensible cover to move the extensible cover and the seal member in the X-axis direction or the Y-axis direction so that the machining head corresponds to the seal member as viewed in a Z-axis direction when the machining unit is moved in the X-axis direction or the Y-axis direction.

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Claim 6 (Currently Amended). A machine tool according to claim 4, wherein the compartment cover comprises a roll cover[or a telescopic cover].

Note: the claimed alternative of the “telescopic cover” is not shown in the drawings.

Claim 7 (Currently Amended). A machine tool according to claim 5, wherein the compartment cover comprises a roll cover[or a telescopic cover].

Claim 8 (Original). A machine tool according to claim 1, wherein guide rails are mounted immediately on the upper surface of the bed and the Z-axis saddle of the machining unit is mounted on the guide rails.

Claim 9 (Original). A machine tool according to claim 2, wherein guide rails are mounted immediately on the upper surface of the bed and the Z-axis saddle of the machining unit is mounted on the guide rails.

Claim 10 (Original). A machine tool according to claim 3, wherein guide rails are mounted immediately on the upper surface of the bed and the Z-axis saddle of the machining unit is mounted on the guide rails.

Claim 11 (Original). A machine tool according to claim 1, wherein the seal member comprises a scraper having a seal lip and has a tip end thereof directed toward the machining region.

Claim 12 (Original). A machine tool according to claim 8, wherein the seal member comprises a scraper having a seal lip and has a tip end thereof directed toward the machining region.

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Claim 13 (Original). A machine tool according to claim 9, wherein the seal member comprises a scraper having a seal lip and has a tip end thereof directed toward the machining region.

Claim 14 (Original). A machine tool according to claim 1, wherein the machining head comprises a multi spindle head provided with a plurality of tools.

Claim 15 (Original). A machine tool according to claim 11, wherein the machining head comprises a multi spindle head provided with a plurality of tools.

2. The following is an examiner's statement of reasons for allowance:

U.S. Pat. No. 3,466,811 to Suddarth teaches a coolant hood used in a machining environment (see Figures 1-2, for example). The hood includes a compartment cover (see the top of Figure 1) that encloses a region in which a workpiece is machined. Opening 64 includes sealing flaps 66 mounted on the inner circumference thereof (see Figure 1 and col. 3, lines 11-30, for example).

However, it is noted that the workpiece is passed into and out of the opening 64 with the sealing flaps 66, and that the machining tool is passed through the opening 24 (see Figures 1-2 and col. 4, lines 10-18 and col. 3, lines 10-30, for example), which opening 24 does not have any sort of seal therein.

Thus, Suddarth does not teach that "an entire periphery of an outer peripheral surface of the machining head is brought into sliding contact with an inner peripheral edge of the seal member in a state, in which the machining head is moved into the machining region..." as set forth in independent claim 1.

Also, there is no combinable teaching in the prior art of record that would reasonably and absent impermissible hindsight motivate one having ordinary skill in the art to so modify the teachings of Suddarth, and thus, for at least the foregoing reasoning, Suddarth neither anticipates nor renders obvious the present invention as set forth in independent claim 1.

References such as U.S. Pat. No.'s 5,482,414 to Hayashi et al., 6,884,009 to Maeda, 6,120,222 to Hiramoto et al., or 5,607,269 to Dowd et al., for example, teach machine tools wherein a machining unit is moved through an opening window of a compartment cover in order to move between a position outside of the machining region and a position inside of the machining region (where the workpiece is located).

However, none of Hayashi, Maeda, Hiramoto, or Dowd teach a "seal member in the form of a closed ring to be mounted on an inner peripheral edge of the opening window of the compartment cover" nor that "an entire periphery of an outer peripheral surface of the machining head is brought into sliding contact with an inner peripheral edge of the seal member in a state, in which the machining head is moved into the machining region..." as set forth in independent claim 1.

Also, there is no combinable teaching in the prior art of record that would reasonably and absent impermissible hindsight motivate one having ordinary skill in the art to so modify the teachings of any of Hayashi, Maeda, Hiramoto, or Dowd, and thus, for at least the foregoing reasoning, none of Hayashi, Maeda, Hiramoto, or Dowd anticipate or render obvious the present invention as set forth in independent claim 1.

JP 2001-315040 (U.S. Pat. No. 6,811,361 is an English language equivalent, and thus any column and line numbers referred to are with respect to the US '361 patent) teaches a seal 32

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completely surrounding the periphery of spindle head 8 within an opening 8a in the first cover plate 31 of the cover device (see Figures 6, 10, and col. 4, lines 46-54), and the spindle head slidingly moves "longitudinally" within the opening 8a (Figure 6, col. 4, lines 46-54).

However, even if vertically movable saddle 4, for example, is considered to be the claimed "Z-axis saddle" since it moves in the longitudinal direction of the column 2, for example, and horizontally movable saddle 6 is considered to be the "machining unit", and the spindle head 8 considered to be the "machining head", JP '040 still doesn't teach that the opening window 8a is provided on the compartment cover so permit the machining head to go in and out of the machining region therethrough", nor that the "machining head is moved into the machining region" (in which the work supported on the support table is machined as previously set forth in the claim) from a "tool exchange position within the machine region" (in which the machining unit is movably arranged, and which is compartmented by the claimed compartment cover) as set forth in independent claim 1.

Also, there is no combinable teaching in the prior art of record that would reasonably and absent impermissible hindsight motivate one having ordinary skill in the art to so modify the teachings of JP '040, and thus, for at least this reasoning, JP '040 does not render obvious the present invention as set forth in independent claim 1.

The aforescribed prior art being considered to be representative of the closest prior art of record to the present invention as set forth in independent claim 1, for at least the foregoing reasoning, the prior art of record neither anticipates nor renders obvious the present invention as set forth in independent claim 1.

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Additionally, it is noted that the non-elected species claims were brought back in since they depend from allowable claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is noted that US2005/0180827 and US 20060120819 teach devices that have some similar features to those of the present invention, but that neither of these references are available as prior art as both were filed after the filing date of the present application.

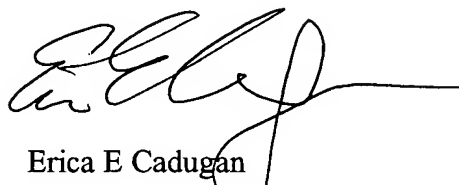
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica E. Cadugan whose telephone number is (571) 272-4474. The examiner can normally be reached on M-F, 6:30 a.m. to 4:00 p.m., alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Monica S. Carter can be reached on (571) 272-4475. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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Primary Examiner
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